

# Shaping the Future




## Research, Skills and Innovation Driven Rejuvenation

*Professor David Mullins*

# The University of Warwick

From green fields in 1965



The University of Warwick  
- The Original Site

To 51<sup>st</sup> ranked in  
World and 3<sup>rd</sup>  
fastest rising  
university





Established in 1980 by **Lord Kumar Bhattacharyya**  
Founded on - '*academic excellence with industrial relevance*'



World class research, improving  
skills and delivering impact

R&D with companies

Education - school to boardroom

Enable products and services  
exploiting the latest technologies

# WMG and China

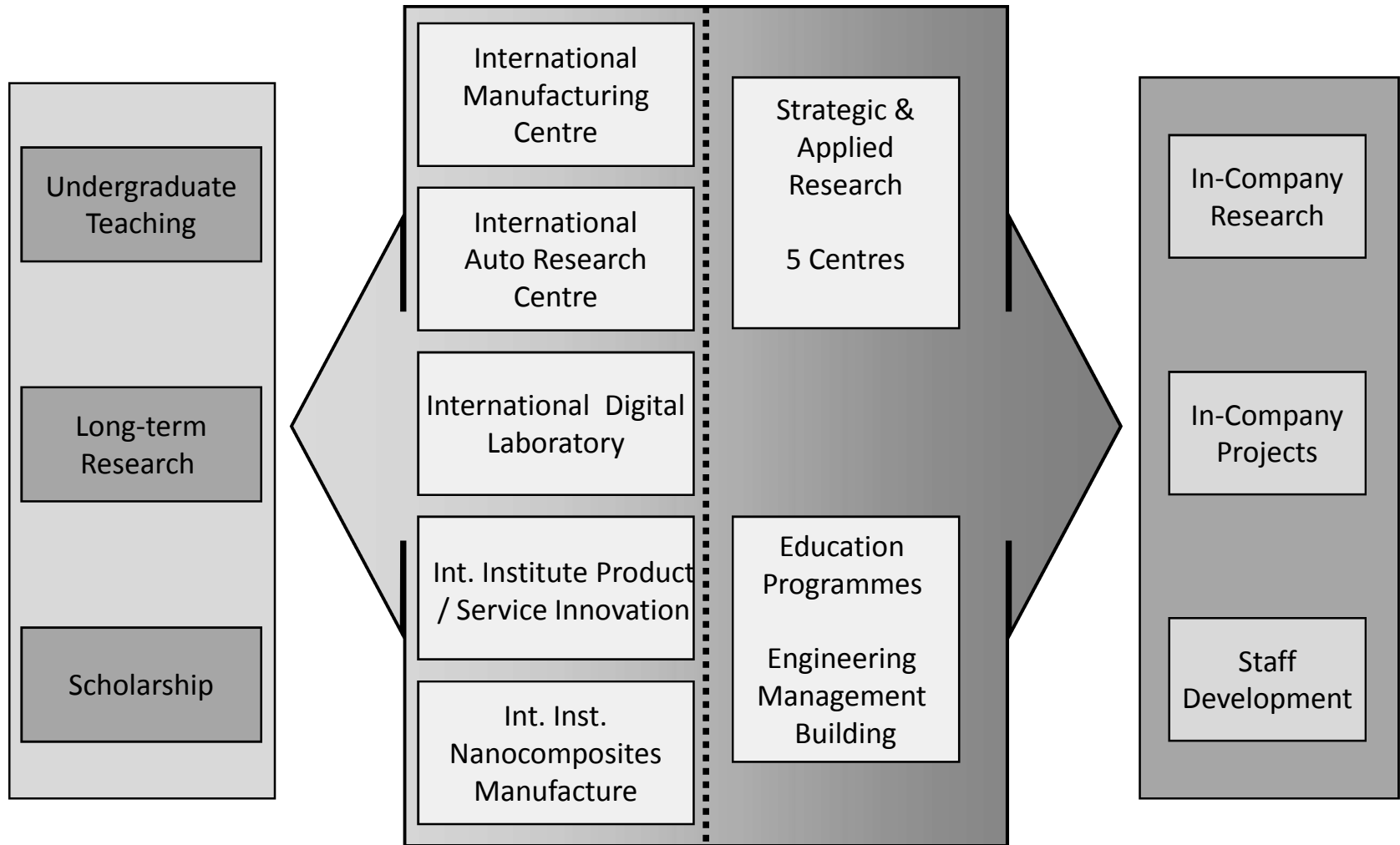
- **A 30 Year Relationship**
- Over 1,500 senior managers on SAFEA programmes to UK e.g. AVIC, BJAOST, Liaoning University, SINOPEC and Zhejiang Provincial Government
- Over 2,000 professionals from 650 companies on programmes in China
- Research projects in China e.g. Shougang Group



# The Role of Collaboration and Impact

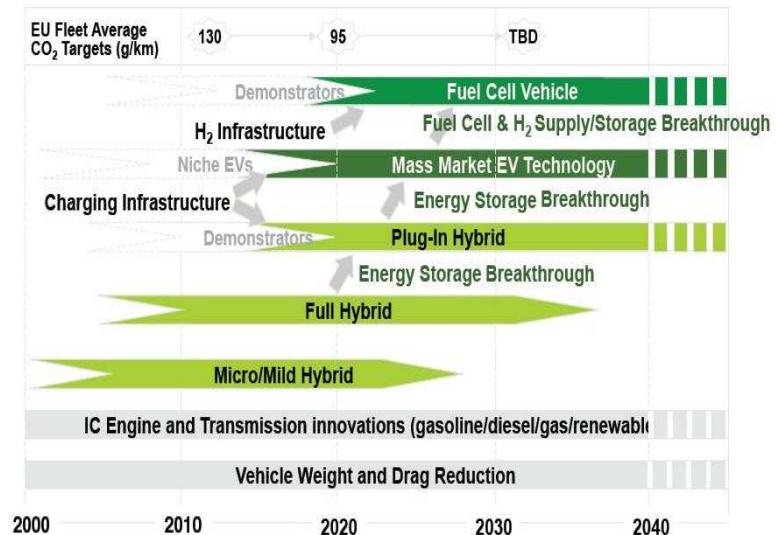
- Manufacturing, engineering, technology and business are applied subjects – collaboration and impact at their heart
- University role to put knowledge in form that can be used
- Create tailored mechanisms '*pathways to impact*' to enable exploitation - can't leave to chance
- Focus on how a 'customer' can most easily absorb
- Research, unique facilities, demonstrators, education and skills, knowledge transfer and partnerships

# Intermediate Institute

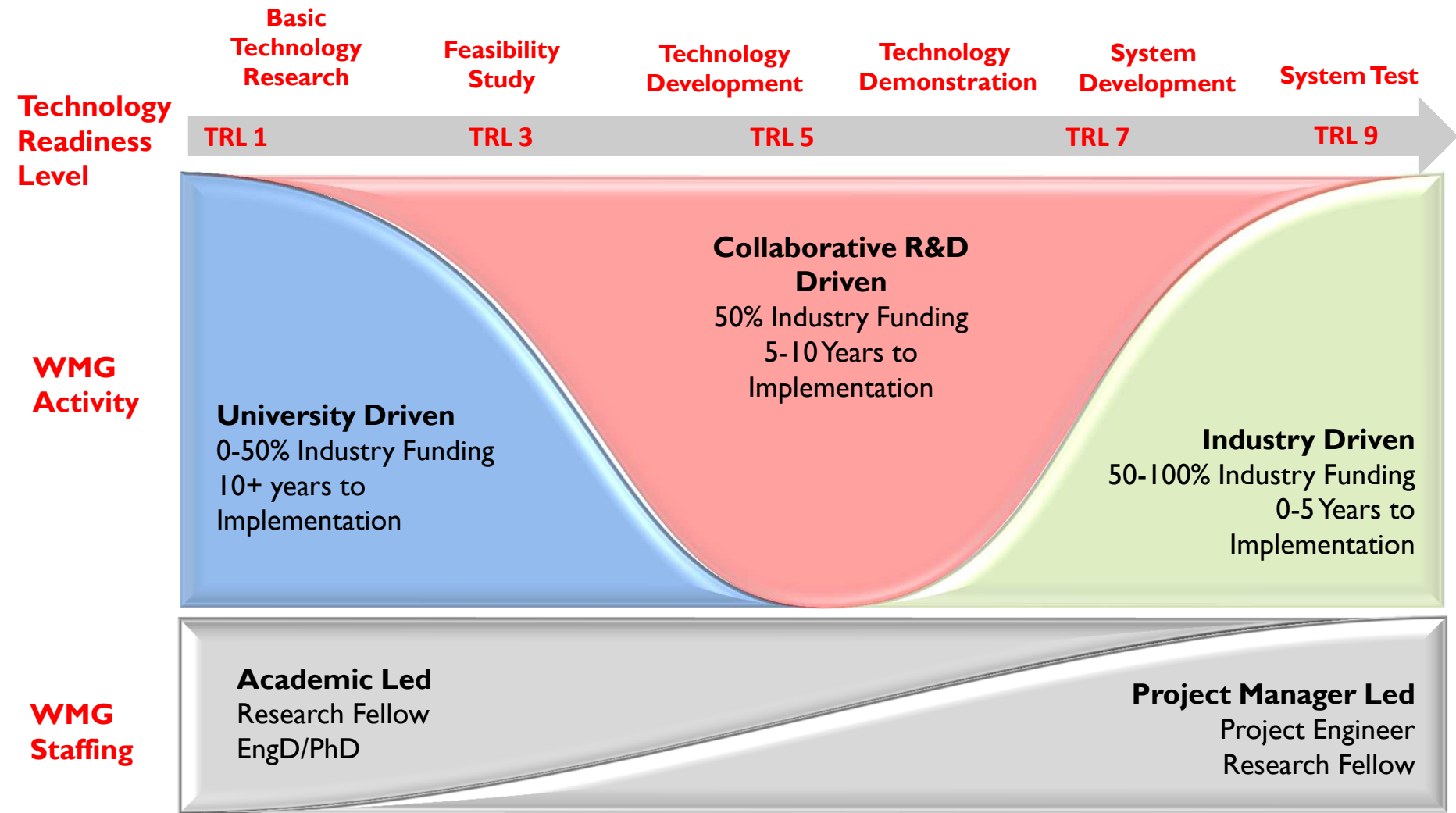


# Advanced Propulsion Centre

- An RMB 9bn. commitment between UK Government and the automotive industry
- To Position the UK as a global centre of excellence in Advanced Propulsion
- Technology Roadmap to 2050
- WMG hosts Hub - University based technology spokes
- Industry led collaborative research programmes



# Research Landscape





# Unique R&D Facilities include

## Energy Innovation Centre



## Autonomous Systems Simulator



# Automotive Research

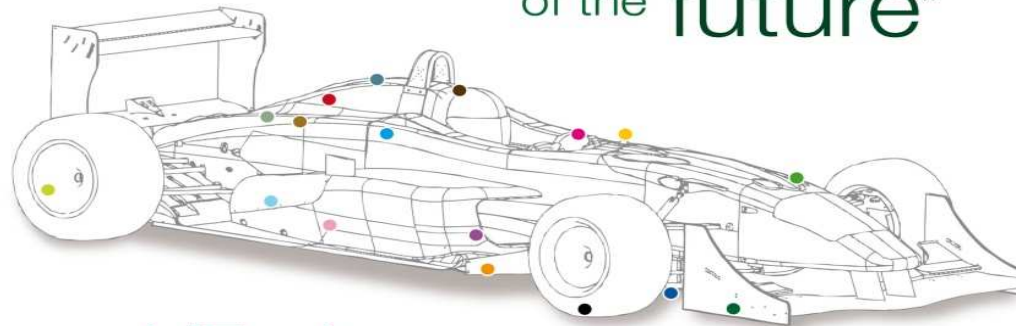
- Premium Automotive R&D Programme (PARD)
- Four year strategic programme including 170 supplier companies
- 17 research projects with wide dissemination through 2 skills projects
- Numerous implementations in vehicles
  - 295 New Products and Processes
  - 5,439 Learning Opportunities
  - RMB 900M Additional R&D investment
  - RMB 1.3bn Value Added
  - RMB 300M Private Sector Leverage

# Automotive Simulation Project: Partners



# Demonstrator Programmes

“Welcome to the  
sustainable racing car  
of the future”



- **Engine Cover**  
Recycled carbon fibre.  
Milled Carbon and Lola
- **Wiring Loom**  
Lightweight, halogen free  
and incorporating recycled  
materials. Yazaki
- **Barge Board**  
3 dimensionally woven  
natural fibre composite,  
University of Ulster
- **Engine**  
2 litre turbo diesel,  
Biodiesel calibration  
by Scott Racing
- **Brakes**  
Non carbon discs with low  
embodied energy. Castrol nut  
shell pads in development.
- **Side Pod Closing Panel**  
Flax fibre and resin from  
recycled bottles,  
Andy Fox and Gray Valley
- **Side Pod**  
Glass fibre with resin from  
recycled bottles,  
Andy Fox and Gray Valley
- **Radiators**  
Coated with a catalyst  
which converts ozone to  
oxygen. BASF Premix

**worldF3rst**  
A force for sustainable motor racing **RACING**

- **Seat**  
Flax fibre shell, soy bean oil  
foam and recycled polyester  
fabric. Lear
- **Steering Wheel**  
Polymer derived from  
carrots and other root  
vegetables. Cellucomp
- **Wing Mirrors**  
Potato starch core  
and flax fibre shell.  
Biopolymer Network
- **Damper Hatch**  
Recycled carbon fibre.  
Milled Carbon and Lola
- **Front Wing End Plate**  
Potato starch core and flax  
fibre shell. Biopolymer Network
- **Bib**  
Woven flax fibre prepreg material.  
Lola and Lineo
- **Tyres**  
Elimination of polycyclic  
aromatics. Avon
- **Lubricants**  
Plant oil based  
lubricants. Fuchs
- **Brand Strategy**  
Team naming, identity and design,  
Life





- **WMG Academy for Young Engineers**  
Business-focused, business-led innovative schools
- 640 students (14-18), studying Engineering with Digital Technology at Warwick
- Second WMG Academy for 1,000 students opened in Solihull in September



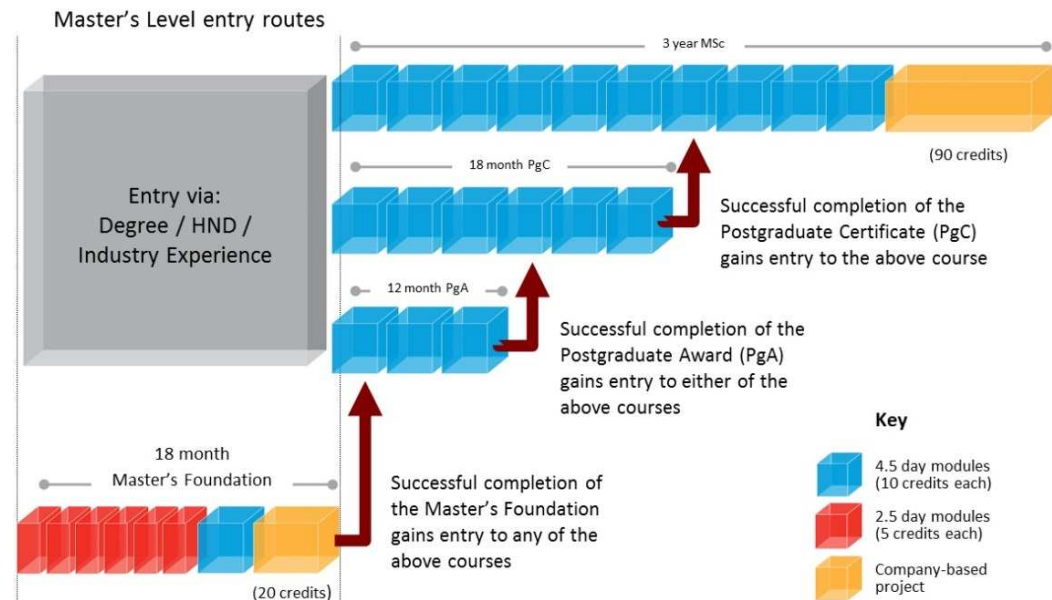
- Applied Engineering Programme - undergraduate degree apprentices – 10 companies, 3 sectors
- Technical Accreditation Scheme - 6,500 technology Masters modules to date



- Engineering Doctorates – in company PhD

# Masters Level with Industry

- Pioneering innovative, modular industry skills programmes internationally - 35,000 awards to date
- Tailored programmes e.g.
  - *AstraZeneca*
  - *BAE Systems*,
  - *China Aerospace*
  - *Network Rail*,
  - *Rolls-Royce*,
  - *UTC Aerospace*
- Open programmes





# Hands On Education

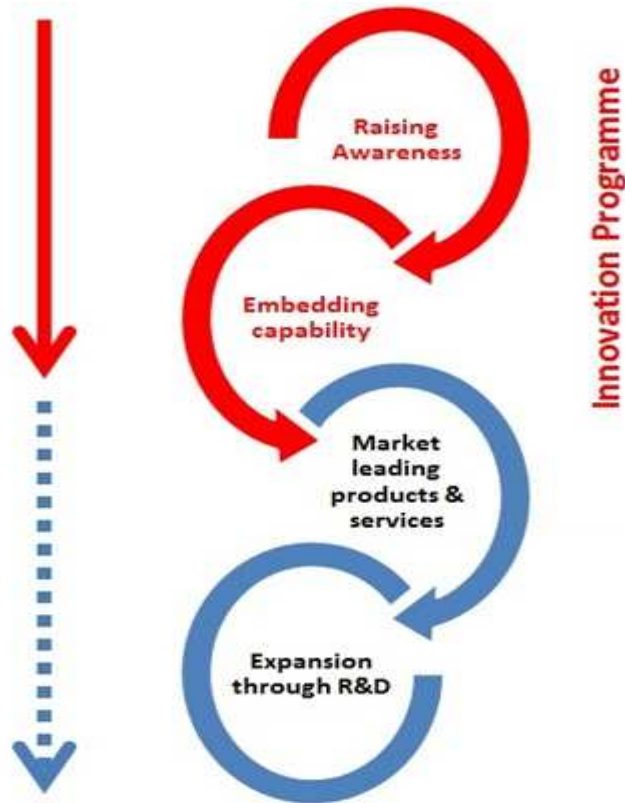




# Industry Programmes

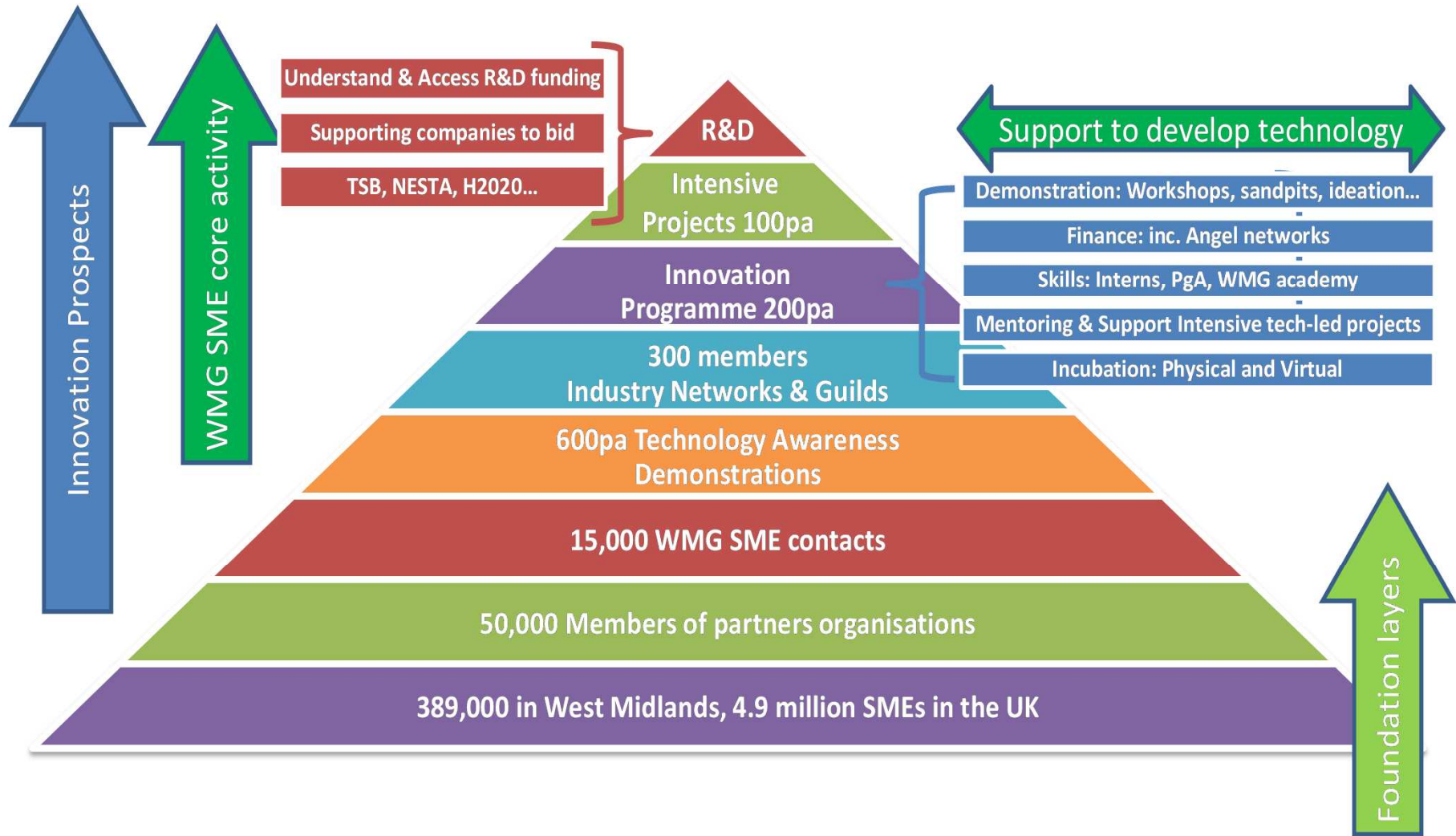
- Relationships with over 1,000 global companies
- Supporting 1,800 smaller companies through small company programme
- Training banks on investment decisions in manufacturing e.g. Barclays, Lloyds, RBS and Santander
- Dedicated leadership programme for SME owner / managers and graduate internships into SMEs

# Working with SMEs



- **20% - Late adopters**  
Awareness briefing, case studies, demonstrators
- **45% - Mainstream SMEs**  
Intensive company projects – prototyping, identifying markets, internships, product/service evaluation
- **25% - Leading edge SMEs**  
In-depth workshops, advanced demonstrations, horizon scanning, hands-on
- **10% - Feasibility to full R&D**  
Feasibility studies, collaborative projects assistance with funding / grant applications

# Small & Medium Sized Enterprises

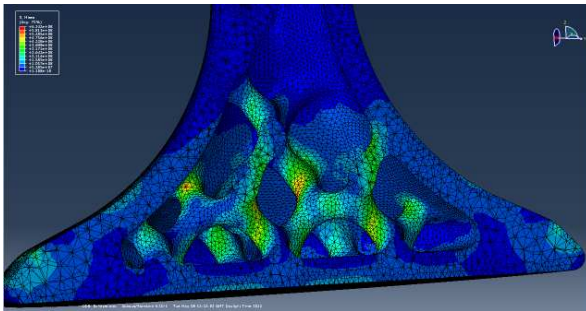


# Mentoring SMEs

## I2M



start-up Additive Layer  
Manufacturing business



## Automotive Insulations



noise & thermal  
reduction systems





# National Automotive Innovation Centre



# WMG: Further Information

[www.wmg.warwick.ac.uk](http://www.wmg.warwick.ac.uk)



WMG  
在中国

